

## Abstract

A proper incident state can be obtained in each pixel in accordance with a distance between an optical system and a sensor photoreceptive portion, and improved photoreceptive efficiency and even sensitivity of pixels can be attempted.

Since a main light beam is launched on pixels in a screen peripheral part at an angle of incidence  $\theta$ , a microlens (260), color filter (250), wires (220, 230 and 240), photodiode (110) and so on are disposed along the direction of incidence in accordance with the angle of incidence  $\theta$  in a positional relationship. The angle of incidence  $\theta$  here is determined in consideration of a distance from the microlens (260) to the surface of the silicon substrate (100) and a position in depth of the photoelectric converting portion of the photodiode (110) from the surface of the silicon substrate (100). The photoelectric converting portion (n-type region) of the photodiode (110) tilts in a pixel in the screen peripheral part in accordance with the angle of incidence  $\theta$ .